ATTACHMENT 3

AUBURN City FIRE Since 1852

Memorandum

To:	City of Auburn Planning Commission
From:	Mark D'Ambrogi, Fire Chief
Date:	February 7, 2011
Subject:	Baltimore Ravine Project Access Review

A review has been conducted by the fire department for the Baltimore Ravine Project access points. This review identifies criteria used for review of projects and development, reviews specifically to the Baltimore Ravine Project alternative access routes, concerns of access routes, recommendations regarding the alternatives, and statistical information in the form of fire department response times.

Criteria Used by the Fire Department for Evaluating Access for Development Projects.

- Standard of road
  - Width
  - Length
  - Grade
- Type of road
  - Main arterial road
  - Limited residential
  - Limited commercial
  - Emergency access road
- Attributes and Accessories
  - Turnouts
  - Turnarounds
  - One way
  - Vegetation management/Landscaping
  - Fire hydrants
  - Obstructions/hazards
- General
  Emergency response times are critical to delivering services throughout the city. Therefore streets and roads are of importance when planning for development. Generally main arterial streets and roads; 3 lanes or more with limited intrusion; driveways and non-controlled side streets, are desired for travel to smaller city streets that immediately serve development. Multiple points of access are

important for ingress and egress during an emergency and can impact response times.

Other areas evaluated include but not limited to: natural impacts; fire hazard severity zones, vegetation (non-ornamental), grades, "man-made" impacts such as tunnels, bridges, and enhanced topography; steep side slopes on edge of roadways.

- Requirements for development pertaining to fire safe regulations are derived from the Auburn Municipal Code (AMC). The AMC is consistent with and incorporates state statutes that apply to fire safe standards

Baltimore Ravine Project Access Review

Alternative #4 - Auburn-Folsom Road at Pacific Street

This proposed access will start off Auburn-Folsom Rd at an established signaled intersection, commence for approximately 4900 feet, and terminate into the proposed project area. This access begins at the intersection of Pacific and Auburn-Folsom, crosses the railroad tracks and commences into a road as proposed for both #4 and #5. The access itself will present bridges(s), curves, and grades and will not serve any development until its termination into the project area. The area where the road is proposed will be in undeveloped land.
From an emergency response perspective, the following are identified as concerns: the existing signaled intersection at Auburn-Folsom and Pacific already causes fire apparatus to slow upon approach increasing response times.

Alternative #5 - Auburn-Folsom Road at New Intersection South of Pacific Street

This proposed access will begin off Auburn-Folsom Rd, a main arterial access road, at a newly established intersection with traffic control approximately 700 feet south of the existing intersection of Auburn-Folsom and Pacific. The access will commence for approximately 4900 feet and terminate into the proposed project area. This access is an entirely new intersection created on Auburn-Folsom Road. After crossing the tracks the access commences into a road as proposed for both #4 and #5. The road itself will present bridges(s), curves, and grades and will not serve any development until its termination into the project area. The area where the road is proposed will be in undeveloped land.
From an emergency response perspective, the following are identified as concerns: existing signaled intersection at Auburn-Folsom and Pacific already causes fire apparatus to slow upon approach increasing response times. . An additional signaled intersection would create added slow down for fire apparatus. Signaled intersections will not only cause slower response into the project area but to those areas south of the intersections on Auburn-Folsom Road. The termination of the bridge over the tracks entails a 90 degree right turn immediately after traversing the bridge. This will cause a significant slow down and turning maneuver for fire apparatus.

Concerns Regarding the Road (common to both Alt #4 & Alt #5) After Crossing the RR Tracks

The proposed new road from its southern terminus in the project, north to the western boundary of the UPRR right-of-way (where both alternatives converge), is a long and winding two lane road. This road travels through undeveloped land which is comprised of thick natural vegetation. This condition poses a significant concern as it presents a higher risk and greater potential of ignition sources which means greater number of intense wildfires. Additionally, being a main access with significant distance to traverse between termination points in a wildland environment, the safety of both civilian and firefighting personnel may be jeopardized during a wildfire situation should any portion of the roadway become inaccessible. This includes not only the "fire" itself, but the road used by fire suppression resources for fire fighting and or holding perimeter lines.

The steep downsides of the roadway may present challenges to firefighting personnel when responding to vehicle accidents, roadside fires, and other incidents that occur in such locations. Any type of incident that occurs on sloped terrain creates safety issues for personnel where falls and slips can cause significant injury. Working from steep terrain requires special equipment and additional resources.

Length, curves, and grades of road may pose potential challenges to fire apparatus in the way of response. Both curves in the road and the various grades ascending and descending, require fire apparatus to progress at significantly slower speeds. Slower speeds will increase response times during emergency incidents. Such curve and grade may have an impact on large vehicle operation that can affect braking and may present safety issues.

Bridges can present unique challenges in emergency situations. When incidents occur that require fire resources under bridges access can be difficult and dependent upon facilities under bridges i.e. water, undeveloped land, railroad tracks, and roads. Fires that occur under bridges can also present significant risk to surrounding areas as well as the bridge itself as used for access both for emergency resource response and citizen evacuation. During severe cold weather bridges may present ice conditions and impede fire apparatus travel reducing response time.

Standard conditioning for these access ways include: both accesses could only work with the 2 other access routes as proposed in the project, widths and grades to meet city standards, fire hydrants at spacing as required by the Fire Code, and aggressive fuel reduction be applied to areas along the roadway at all times. These are considered standard conditions as for this project and do not provide mitigation for the above mentioned concerns.

Approximate response times from operating fire facilities to the beginning of the project area were calculated. Note: these times represent only the time to the beginning of the project area, not to a specific address/location (see following table). It is assumed that additional response time would be added to these times given a specific location/address.

Recommendation with Consideration to Access Proposal #4 & #5 Only

After review of the proposed accesses, #4 and #5, and identifying a number of issues and concerns, neither proposal is a preferred access into a development project. This is primarily due to the length and type of road used to serve the project area. It is not a common application to have a long winding and steep road to serve a development project and no other development along the way.

However, in comparison of Alternatives #4 and #5, Alternative #4 presents the least impact since it utilizes an existing intersection. Alternative #5 will have a greater impact, not only to the project but all areas south of this intersection on Auburn-Folsom Road, as the addition of another signaled intersection will impose response delays for fire apparatus. In addition, after crossing the bridge of Alt #5 there is a 90-degree right turn that proceeds into a steep and sharp curve. This configuration may have impact on fire apparatus travel that will reduce response time.

Initial Access Proposal of Project- Herdal Drive

This proposal is an approximate extension of 1300 feet to the existing Herdal Drive, the addition of a 70 foot span bridge, and termination directly into the project area. The overall length from Auburn Folsom Road would be approximately 2,100 feet. The new extension would meet street standards in width, grade, and vegetation height clearance. The proposed access is within a developed area already and does not present any additional intrusions; additional side streets, driveways, or other obstructions. The grade difference is minimal, very gradual incline into project area, and the proposed bridge span is extremely short in length and without grade. The Herdal access delivers emergency resources by way of Auburn-Folsom Road; a main arterial way, directly into the development area through existing development without any potential delays or causes of concern. Since this is a developed area already, there is limited concern for open vegetation and wildfire concerns. Any vegetation in the access area will be that of landscaping or homeowner ornamental varieties.

From a time response perspective, Herdal Drive is the most direct access into the project area and provides reasonable emergency response times without significant delays or potential hazards. This is the case for both the Sacramento Street Fire Station (#2) and the Maidu Fire Station (#3).

As a side note regarding the Maidu Fire Station: In long term Master Planning the Maidu Fire Station is identified as being a staffed facility at some point in time.

This means that primary service will respond from this facility of which will greatly reduce response times.

Recommendation with Consideration to Proposal #4, #5, and Herdal Drive

Herdal Drive is the recommended access for this development due to many factors. These include: reasonable response times, direct access using main arterial ways and established streets, access through existing developed area, no significant response inhibitors such as side streets, curves, grades, and open space areas with natural vegetation.

Approximate Response Times		
Route of Response [1]	**Response Time to Project Area** [2] **(Minutes & Seconds)**	
	Sacramento Street Station	**Maidu Station**
Access Alternative #4	5:24	5:39
Access Alternative #5	5:36	5:24
Herdal Drive Proposal	4:12	2:10

[1] Using standard Time/Distance/Speed calculations, formula calculations standard to obtaining response times from information provided on road lengths and actual field samples on existing roadways as applicable.

[2] Response time include actual travel time from facility plus reaction time: time of call to actual initiation of vehicle movement. The project area was identified as a constant point for all evaluations, this is not an established location or address within the project area. Estimation of 1 to 2 additional minutes to actual development within the project area.

Response Evaluation

Although the City has no established standards for fire department response time, it is important to identify response time to compare with recognized national fire service standards. The most recognized fire service standard for response is the arrival time to an incident. Obviously, the quicker resources can arrive on scene of an emergency the quicker mitigation can begin.

The time of four (4) minutes to arrival is a recognized national response standard [3]. This time of arrival is most effective for most emergency incidents such as fire and medical. The next critical response standard is the six (6) minute arrival time. This time is critical since fire can reach a "flashover" or "fully-involved" stage where resources are not as effective and in the medical situation, this is where "life or death" can occur especially in cardiac and or trauma situations.

Currently the department arrives to 45% of all calls within four (4) minutes [4]. Response from the Sacramento Street station using the Herdal Drive access will most likely establish arrival times above four (4) minutes but within six (6) minutes. Note: future initial response from the Maidu Fire Station via the Herdal access may establish responses times within the four (4) minute criteria.

Currently the department arrives within six (6) minutes to 80% of calls [5]. Response times associated with Alt #4 and Alt #5 will be over six (6) minutes and above the 80% threshold, the longest response time criteria as currently experienced by the department.

The current average response times to the end of Perry Ranch Road and Rogers Lane are 9 minutes 20 seconds and 9 minutes 37 seconds respectively. These response times are from the existing fire facility on Sacramento Street. Using the proposed alternates, Herdal access, proposed streets and roads, and the same fire facility, the following estimated response times have been calculated:
Alternate #4 to end of Perry Ranch Road- 6:13, to end of Rogers Lane- 7:02.
Alternate #5 to end of Perry Ranch Road- 6:25, to end of Rogers Lane- 7:14.
Herdal Drive to end of Perry Ranch Road- 5:01, to end of Rogers Lane- 5:50.

National Fire Protection Association (NFPA) Standard 1720 [6] recommends response times based on the "demand zone" of areas which are based on demographics. It is anticipated that such response times will be met 100% of the time using the Herdal Drive access and 80% - 90% of the time using the other proposed access routes.

[3] NFPA 1710, *Organization and Deployment of Fire Suppression Operations to the Public by Career Fire Departments*
[4] Based on 2009 Fire Department Stats
[5] Based on 2009 Fire Department Stats
[6] NFPA 1720, *Organization and Deployment of Fire Suppression Operations to the Public by Volunteer Fire Departments*